Environmental-Field Assessment and Survey Technology (E-FAST)

A Product of the Small Business Technology Transfer (STTR) Program

THE PROBLEM:

The cost of characterizing and monitoring DOD contaminated sites using traditional methods and technologies could exceed $100 billion. Screening of hazardous waste sites normally involves drilling boreholes, installing monitoring wells, collecting samples, and analyzing the samples in an off-site laboratory. The process is slow and expensive, and results are often inconclusive. New sensor and data management technologies will reduce costs and provide accurate on-site screening.

APPROACH:

In 1995, the US Air Force Research Laboratory solicited through the STTR program for innovative concepts for sensors, sensor integration, and data analysis for site characterization and monitoring. Nomadics, Inc., in conjunction with Oklahoma State University, responded with a proposal to integrate environmental sensor, video, audio, position, communication, encryption, and bar code reader technologies. The result would be a cost effective, field portable device for data collection, tagging, analysis, and multimedia reporting consistent with federal requirements for data integrity.

THE SOLUTION:

Nomadics is using commercially available computers and software as the integrating platform. Functions are being integrated through the Personal Computer Memory Card Inter-

Palm-Top Computer with PCMCIA Card and Sensor

Tablet Computer with Multiple PCMCIA Cards
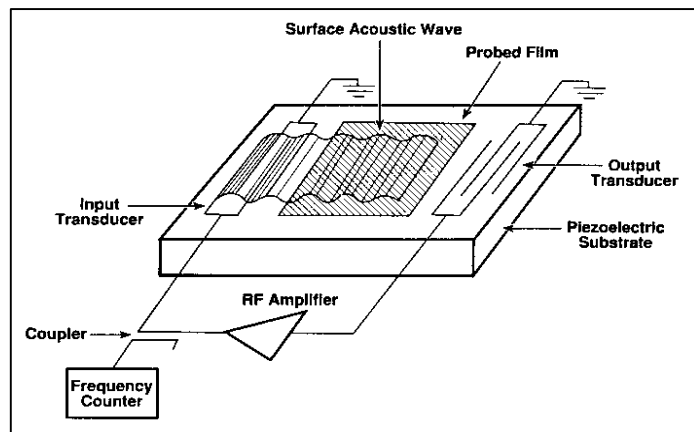
national Association (PCMCIA or PC card) and Universal Serial Bus (USB). An expansion box is being developed to provide additional PCMCIA slots, USB ports and battery capacity.

SENSITIVITY:

The initial device will include a miniaturized surface acoustic wave (SAW) environmental sensor being integrated on a PCMCIA card in a parallel Phase II Small Business Innovation Research (SBIR) project. The sensor is evolving from research accomplished by Sandia National Laboratory to detect volatile organic compounds. Detection limits less than a ppm have been demonstrated in the laboratory.

PAYOFF:

E-FAST will provide a versatile, field-portable data acquisition and analysis device with data storage, retrieval, and transfer capability. The use of open architecture, standard protocols, and commercially available components allows easy incorporation of added capabilities in the future as they emerge. The incorporation of risk-based corrective action (RBCA) software will permit site assessments in real-time. E-FAST offers assured data quality, chain of custody satisfaction, and versatility at a fraction of the cost of current data-gathering methods.

COMMERCIALIZATION:

Nomadics is building upon their success fielding individual pH and temperature meters using commercially available palm-top computers and PCMCIA standards. They are investigating commercialization alternatives through vendor conferences and technical symposia, establishing strategic alliances, and soliciting industry partnerships where appropriate. Many other potential applications exist requiring site visits for data gathering such as 1) accident investigations, 2) natural disaster triage, 3) site surveys, interviews, census taking and others.

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